OLIVE OIL, COMPANIES AND WORK FACING THE FUTURE

INNOVATION, QUALITY, MARKET, MULTIFUNCTIONALITY, OPPORTUNITIES AND CHALLENGES

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THE REFORM OF THE COMMON ORGANISATION OF THE MARKETS IN OLIVE OIL

THE SINGLE PAYMENT SCHEME

The European Union, by means of Regulation No. 864/2004, has amended the Common Agricultural Policy of the olive oil sector by introducing the single payment scheme, based on individual entitlements granted to producers; their value is calculated through the average amounts collected during the olive harvest campaigns 1999/2000, 2000/2001, 2001/2002 and 2002/2003, compared to the average of surfaces cultivated with olive trees, that is the object of subsidy applications filed in said four-years period.
As from the olive harvest campaign 2005/2006, the EU subsidies will not be issued anymore on the basis of the quantity of oil and table olives produced, but rather on the basis of the entitlement and the **eligible surface** that producers cultivate with olive-trees, for which the maintenance of good agronomic and environmental conditions must be guaranteed, as well as the conditionality criteria in the subject of public health, plant health, and the environmental welfare decided by the European Commission.
Starting from 2006, forty years after the initial CMO of olive oil, olive growers will be confronted with a completely new type of aid, based on the decoupling of direct payments.
According to the Regulation, the farmers producing olive trees will receive 60% ("decoupled" aid) of the amount due on the basis of the entitlement.
However, within the 1st of August 2005, Member States could decide on the form of decoupling (either total or partial) and thence to modify this percentage; Italy opted for the total decoupling of aids, as per Ministerial Decree of 3 August 2005.
Decoupling represents an advantage for specialized olive growers, who secure the payment by defining it once and for all, without any further constraints. The decoupling measure has introduced aids that are completely independent from production: it also allows not to cultivate the surface, but in this case it is necessary to guarantee the agronomic maintenance of the land.
The full payment of the subsidy is subject to a single requirement – conditionality – that consists in the compliance with the fundamental criteria in the field of environmental, food safety, and good agronomical and environmental conditions in which all the agricultural land shall be preserved.
Entrepreneurs will therefore concentrate their attention on the competitiveness of their firm, in terms of cost reduction, quality and product differentiation.
On the other hand, decoupling evidently highlights the problem of production competitiveness in marginal and non-mechanized areas where most of the olive growing with a high environmental and landscape value is concentrated; in these territories it is necessary to introduce some interventions relating to regional planning of rural development.

WORK PROGRAMMES

Until the 2004/2005 campaign, by means of regulations 1334 and 1331, recognized organizations implemented annual work programmes financed through a withhold made by Member States on the subsidies to the production of olive oil as per EC Regulation no. 1638/98. This withhold was fixed to 3 % by art. 1 of EC Regulation 1873/2002.
As regards the programmes mentioned above, regulations 1334 and 1331 have set the times and procedures for the financing application, approval and payment of the financing.
In the framework of the new CMO in olive oil, the EC Regulation no. 865/04 provides for the implementation of three-year **work programmes** to be drawn up by operators' organizations recognized on the basis of the new regulations.
Through EC Regulation no. 2080/05, the European Union laid down the rules for the implementation of EC Regulation no. 865 as regards operators' organizations in the olive sector, their work programmes and the financing thereof.
The preconditions for the recognition of operators' organizations include that they shall be able to present a work programme for at least one of the following sectors:

a) market monitoring and administrative management in the sector of olive oil and table olives;
b) improvement of the environmental impact of olive cultivation;
c) improvement in the quality of production of olive oil and table olives;
d) system of traceability, certification and protection of the quality of olive oil and table olives, in particular quality control on the olive oils sold to the final consumer, under the authority of national administrations;
e) dissemination of information on measures carried out by operators' organizations to improve the quality of olive oil and table olives.

The work programmes eligible for financing under art. 8 of EC Regulation no. 865/2004 shall be implemented during a maximum period of three years. The first period begins on 1st April 2006. The following periods begin on 1st April of each of the three years.

THE COMPETITIVE SCENARIO AFTER THE CAP REFORM: RURAL DEVELOPMENT AND MARKET ORIENTATION

Rural development - that with the Agenda 2000 has become the "second pillar of the CAP" - will be growingly important in future market policy thanks to the modulation mechanism: the percentage of CAP support in the EU budget is destined to decrease, as a consequence of a reduction of subsidies in favor of market actions and direct payments, whereas the support to rural development will increase.
Some general considerations can be made on the basis of EU strategic guidelines for rural development for the period 2007-2013: in the years to come, rural areas shall reckon with the problems relating to growth, employment and sustainability, but they must be solved by seizing the opportunities offered by new sectors as tourism and recreational activities in the rural environment. The agricultural and food sector must seize the opportunities offered by new technologies and innovation in order to conform to the changed market demand, both at a European and at a global level. Finally, the role of farms as a mine of natural resources with a high landscape value shall not be underestimated.
Through the CAP reform, price forecasts and market knowledge in general will become fundamental operational levers for olive growers, and will be fundamental in the definition of business strategies, since with the decoupling measure these will be the only elements that will directly and indirectly contribute to revenue. While facing the market, olive growers will be more and more stimulated to strengthen the horizontal integration with associationism and the vertical integration within the supply chain. The market orientation of olive-growing firms will be measured by the level of compliance of product quality with users' demands (final consumers and industry).

THE QUALITY POLICY

THE QUALITY SYSTEM IN THE EUROPEAN UNION

The last decade was characterized by a deep renewal in the sector of agricultural and food supply, and by the progressive introduction in the market of new types of products marked by new signs, witnessing particular characteristics.
The European Union has promulgated a series of regulations aiming to rule production and to guarantee the protection of several types of food that we presently find on our daily tables: products obtained through organic farming, products with a Designation of Origin or Protected Designation of Origin, products with a Traditional Specialty Guaranteed, products with a product certification, etc.
At the same time, a series of food scandals have imposed the need to guarantee higher levels of safety to consumers; for this reason, fundamental regulations were promulgated at a European level for the safeguard of our health, as well as suitable and correct information to citizens. New laws were enforced in the field of labeling, on the procedures for the self-evaluation of hygiene maintenance in every phase of production, processing, marketing and food supply, and the EU regulation on supply chain and product traceability.
Today's consumers, more careful and with an increased spending ability, ask to be informed. Their willingness to buy is strongly linked to the concepts of quality, food safety, and origin of productions: these concepts are strictly intertwined.
Quality is a complex concept, whose meaning evokes a series of factors linked to the geographical origin, the traditional basis of the productive process, healthiness, environmental protection and men's health.
Quality is divided into:

- Certified quality
- Commercial quality

The *certified quality* is obtained through "an action through which an independent third party states that, with a reasonable reliability, a given product complies with a specific rule or with requirements agreed or adopted by the company as fundamental quality parameters".
Certification fully meets the needs of civil society, and partly consumers' objectives; however, it does not guarantee alone the full achievement of objectives in terms of economic results obtained.
Certification can be of "product, process and geographical origin" and must be communicated to customers through a suitable guarantee trademark or logo labeled on each product package.
Within the European framework, certification helps to solve the problems relating to the objective of harmonization of technical barriers among the different countries.
The *commercial quality* is the set of product characteristics and features (including the service provided) that achieve the result of meeting the needs and taste of final and intermediate customers (the modern distribution). In particular, modern distribution expresses its preferences on product characteristics in terms of perishability, packaging, and adaptation to the needs of the logistic system, which are not always perceived by consumers - final users.
The commercial quality fully meets both consumers and producers' needs, since it is determined by the strategic choices of firms in relation to a specific product/market matrix. It can disregard the intrinsic product and productive process characteristics, that are however fundamental in defining and obtaining the certified quality.
The quality of the company system, considered as the ability of the organization to produce according to predetermined standards, and the transparency in the productive processes, are the main elements which an oil producing firm has to deal with; these have to become its main strengths to face a market that is not only the conventional one, but also open to the new frontiers of oil consumption (organic, PDO and PGI) also at an international level (through the compliance with voluntary rules).

THE DIFFERENT FRAMEWORK REGULATIONS GOVERNING PRODUCT QUALITY

The EU policy on agricultural and food products' quality is divided according to the products considered:

- industrial, whose final characteristics are exclusively determined by the type of manufacturing process used;
- typical, whose peculiarity is due either to the link with the geographical origin of production, or to local tradition and to process development by men as they are passed on in time.

There are different regulations that govern agro-food products from the quality point of view:

- UNI EN ISO 9000 for industrial products;
- EEC Regulation no. 2081/92 for PDO and PGI products;
- EEC Regulation no. 2082/92 for certificates of specific character.

These regulations show some common procedural aspects:
1) any technical specification belonging to each of the different regulations is the heritage of the whole Community, and therefore it has to be registered at:
   CEN, in case of voluntary rules of industrial products;

In suitable registers at the Commission, in case of PDO, PGI and certificates of specific character.
2) every country must inform its EU partners before introducing a rule governing the standard of a food product;
3) the establishment of food codes within which registering process and product standards concerns both products regulated by 2081 e 2082, and the industrial ones through voluntary rules;
4) the "certification of conformity" is issued by the national Authority in charge, for both industrial products and PDO and PGI ones. This measure is necessary for the free circulation of goods in a wider and more and more selective European single market.

FOOD SAFETY

Food safety is a condition that must be guaranteed by the operators of the agro-food supply chain through the compliance with rules and specific actions from which customers can expect, as regards the food used, a 0 or an acceptable risk for their health.
The EC Regulation 178 of 2002 defines the principles and general requirements of food legislation, established the European Authority for food safety, and sets procedures in the field of food safety.
Art. 18 of the Regulation defines the concept of "traceability as follows": "traceability is a technical-organizational innovation, a technique for data collection and management to produce information; product flow is accompanies by the flow of information on the product itself"
In case of food products, traceability has to allow the circulation of information from each stage of the supply chain where they are produced and known (agriculture, food industry) up to the stages where they can be used (retail, consumers) and allow a two-way direction for the same information.
The provisions of EC Regulation 178 are comparable to the provisions of UNI 11020 that rules the traceability in agro-food supply chains, without diminishing the voluntary character of the latter: this allows enterprises to convey to the market information and guarantees that are beyond what is defined in the regulation itself.

THE STRATEGIES FOR QUALITY IMPROVEMENT

Having considered the importance of olive cultivation and the predominant position of the EU in olive oil world market, the future community policy of this product will mainly target to a further quality improvement.
With the enforcement of the transitional regime in 1998 the definitions of olive oil were changed to introduce stricter rules and take into account most modern and effective sensory analysis methods. By means of Regulation no. 796/2002 these definitions were updated and redefined for the purpose of a more precise distinction between different types of oil, and interesting novelties were introduced on the organoleptic evaluation of virgin olive oils relating to the panel test.
The new Regulation on the rules for olive oil marketing (EC Regulation no. 1019/02) contains provisions in terms of packaging, labelling, presentation and advertising requested for the marketing in the EU, safeguarding consumers and allowing producers to optimise the proceeds of the sales of quality products. The regulation authorises producers to market their extra virgin and virgin olive oils with the indication of the geographical origin, whereas optional wording on labels such as "first cold pressing" were standardised, so that consumers are sure of the information shown.
The reform of the olive oil market offers the whole sector the opportunity to contribute to the achievement of the quality objectives fixed by the EU for this sector, through the contribution for the work programmes scheduled by Operators' Organizations, where quality improvement and traceability represent one of the strategic sectors of the associative project.
Here it is enclosed the European Commission's report on "Quality Strategy for Olive Oil", presented to the European Parliament and Council in the year 2000. This report has been the reference document for all the decisions adopted at the EU level on quality policy in the olive oil sector.

THE QUALITY STRATEGY FOR OLIVE OIL ACCORDING TO THE GUIDELINES OF THE EUROPEAN COMMISSION[1]

INTRODUCTION

In the course of the 1998 negotiations on reform of the market organisation for olive oil[2] the Council and Parliament raised a whole set of fairly technical problems linked with quality improvement at various levels. The Council and the Commission felt that these matters should be considered in a co-ordinated matter, and undertook to give:
"special priority to in-depth examination of matters bearing on quality strategy during the lead-up period to the proposal for definitive reform of the olive oil CMO. These matters are:
- olive quality and the existing olive oil production quality improvement programmes,
- the environmental impact of olive oil production, including mill residues,
- classification, notably creation of a "super" extra virgin category and points in connection with deodorised lampante olive oil, refined oil and olive-pomace oil,
- improvement of analysis methods for classifying and checking on olive oils,
- determination of origin and labelling,
- mixtures of olive oil and seed oils,
- traceability and quality certification,
- improvement of quality control."

Since then the Commission has held in-depth discussions on the various aspects of quality strategy. The Standing Group on Olives and Derived Products of the Advisory Committee on Specialist Products has held many discussion meetings on the subject on the basis of major written contributions by its members, representing the various groups of operators in the sector. The IOOC (International Olive Oil Council) and various trade organisations have also provided analytical documents. Lastly, the Expert Olive Oil Chemists' Group of the Management Committee for Oils and Fats has met several times to tackle the more technical aspects and the problems on the verification side.
Analysis of the main quality factors shows that progress at production and marketing levels could be generated by improving the compulsory classification and labelling rules. This supposes also advances on verification and on organisation of the sector.
Olive oil is distinguished from other fats by its special nutritional and organoleptic properties, and the market depends upon the diversity of these properties being transparent. Major items relating to improving olive oil quality are of varying technical complexity and economic importance, and fall into four main groups.
- **Classification** no longer corresponds very well to a market situation where at present the great majority of the oil produced is extra virgin of fairly heterogeneous characteristics. The compulsory category names using generic terms create confusion and can mislead the consumer. The borderlines between categories are the source of a range of technical difficulties relating e.g. to the reliability and precision of analysis methods and the existence of naturally non-standard olive oils.
- **Labelling rules** are often insufficiently precise, notably on verification of claims. The result is a proliferation of wording, sometimes misleading, that is hardly or not at all verifiable and disturbs the market.
- **Fraud control** is a recurrent problem, mainly concerning the basic quality declared (deodorisation of virgin lampante olive oils, blending of lampante oils and oil from mechanical treatment of pomace, mixtures with hazelnut oils etc.).
- **Organisation** of quality improvement, traceability and certification is lacking or needs to be better co-ordinated at the olive production, oil production and blending and residue treatment stages.

In consequence the market situation is dislocated by prices that are not always in line with the quality expected by the consumer. Even when allowance is made for the labelled claims, the price brackets for each category are very wide and overlap considerably with each other. These variations stem from normal commercial practices but are also a consequence of inadequacy of the quality rules, and of their implementation. In the longer term this inadequacy could deter consumers and create a major problem for the sector.
The measures to be undertaken require: a concerted approach over several years; a quality strategy for olive oil that involves producers, traders and industry; work by researchers and experts; the adoption of appropriate rules by the Council, the Commission and the Member States; and adaptation of international provisions at the level of the IOOC and the Codex Alimentarius.

1 This charter is taken from "COM(2000) 855, Commission Report to the Council and the European Parliament on the Quality Strategy for Olive" 21 December 2000
2 These negotiations led to the adoption of Council Regulation (EC) No 1638/98 of 20 July 1998 amending Regulation No 136/66/EEC on the establishment of a common organisation of the market in oils and fats (OJ L 210, 28.7.1998, p. 32).

1. ANALYSIS OF THE PRESENT SITUATION

1.1. Rules and standards

1.1.1. The idea of quality

The International Standards Organisation has given a definition of "quality" that encapsulates fairly well the general concept applicable to olive oils:
"A product's or service's quality is the range of characteristics that manifests its capacity to meet declared or implicit needs[3]*"*
Consumer choice is thus at the centre of definition of the quality of a product. But that is also conditioned by factors such as price and presentation that are not always quality-linked. Moreover, the criteria referred to in a judgement on quality vary in importance with consumer tastes and habits in different regions, with the passage of time and under the impact of information provision and fashion. Generic promotion of olive oil has an essential role to play here.
A first set of criteria concerns "basic quality", i.e. compliance with the requirement that the product be "wholesome, unadulterated and merchantable", which is of course the minimum to be guaranteed. Most of these criteria translate into objective standards that can be verified by physico-chemical analysis, e.g. ranges for various constituents characteristic of the composition of olive oil, maximum undesirable substance levels.
Second categories of criteria are those for "intrinsic quality". These often change over time, and concern the sensory and nutritional properties of olive oil. Some of these, such as acidity, are measurable in a very objective way. Others, such as organoleptic properties, are more complex to assess reliably and reproducibly. These properties, at the heart of the idea of quality, are difficult to separate out into a single scale of values since each consumer may have different preferences. There may also be an appreciation of multiplicity of olive oil tastes. "Intrinsic quality" appears to be based on implicit compromises by consumers between sensory aspects and more physico-chemical ones in which acidity features.
A third set of criteria are those for "associated quality" (i.e. associated with the product), covering aspects that are much more subjective though often not devoid of reality. It covers in particular the image of olive oil linked to culinary traditions and the Mediterranean climate and landscapes. The concern here is for values that are very difficult to objectify and are certainly not rigid. Some subsidiary aspects of "image", e.g. protection of the environment or origin of the oil, can however sometimes be monitored and assessed more concretely.

1.1.2. Rules in force

Quality designations must comply with the labelling rules set in compliance with Community legislation, notably Directive 2000/13/EC[4].
However, the Annex to Council Regulation No 136/66/EEC[5] names and defines nine categories of olive oil and olive-pomace oil. Only oil of these categories and named accordingly can be marketed, and the retail trade is restricted to four of them[6] (see Box 1 annexed to Part I of this document). The same classification of olive and olive-pomace oils is used in the Community customs legislation, the IOOC Agreement and standards and the Codex Alimentarius, with some differences over recourse to organoleptic analysis and on other points of minor importance.
Commission Regulation (EEC) No 2568/91[7] further defines these nine categories and distinguishes them from each other and from other oils/fats by reference to 28 criteria requiring the use of 16 analysis methods. It is Article 35a of Regulation No 136/66/EEC that provides the possibility of setting (through the Management Committee procedure) marketing standards covering in particular quality grading, packaging and presentation, plus the analysis methods that are to be used.
Most of the criteria set by Regulation (EEC) No 2568/91 are intended to guarantee that the product and declared category are authentic, and that there has been no fraud. Along with the general regulatory provisions on permitted residue limits they guarantee the basic quality to the consumer.
Other Regulation (EEC) No 2568/91 criteria such as acidity, peroxide value and the panel test are clearly concerned with "intrinsic quality" olive oil characteristics. They are dependent on the olives used, the extraction and/or refining processes and the oil storage conditions.
"Associated quality" is the subject of specific non-exhaustive rules. For the full range of agricultural products, Council Regulation (EEC) No 2092/91[8] sets organic production rules and Council Regulation (EEC) No 2081/92[9] covers the pro-

3 ISO EN No 8402.
4 Directive 2000/13/EC of the European Parliament and of the Council of 20 March 2000 on approximation of the laws of the Member States relating to the labelling, presentation and advertising of foodstuffs (OJ L109, 6.5.2000, p. 29).
5 Council Regulation No 136/66/EEC of 22 September 1966 on the establishment of a common organisation of the market in oils and fats (OJ 172, 30.9.1966, p. 3025/66). Regulation last amended by Regulation (EC) No 2702/1999 (OJ L 327, 21.12.1999, p. 7).
6 Under Article 35(2) of Regulation No 136/66/EEC only extra virgin olive oil, virgin olive oil, olive oil and olive-pomace oil may be marketed at the retail stage.
7 Commission Regulation (EEC) No 2568/91 of 11 July 1991 on the characteristics of olive oil and oliveresidue oil and on the relevant methods of analysis (OJ L 248, 5.9.1991, p.1), last amended by Regulation (EC) No 379/1999 (OJ L 46, 20.2.1999, p. 15).

tection of designations of origin and geographical indications. In addition to these PDO and PGI rules valid for other products, Commission Regulation (EC) No 2815/98[10] has provisions on designation of the origin of olive oils.
Of the Regulations on quality improvement, mention must be made of Commission Regulation (EC) No 528/1999[11] specifying the measures to be taken and procedures to be followed to improve the quality of olive oil production and its impact on the environment. These measures are financed by a 1.4% deduction from the production aid under Article 20d of Regulation No 136/66/EEC.
Other measures, sometimes less directly linked to olive oil quality, are included (and financed) within the rural development framework.

1.2. Market situation

1.2.1. Operators and their organisations

All those operating in the olive oil sector are involved in the final quality of the products supplied to consumers. The present structure of operators in the olive oil sector can be summed up in the following table for the 1998/99 marketing year:

	SPAIN	ITALY	GREECE	PORTUGAL	FRANCE	EU
PRODUCERS (x 1000)	484	1 000	843	102	24	2 453
Organisations	64	190	82	26	4	366
Associations	2	5	1	0	1	9
MILLS	1 756	6 076	2 590	1 427	132	11 981
REFINING INDUSTRIES	29	13	27	10	0	79
OLIVE POMACE EXTRACTORS	53	45	42	13	0	153
PACKAGING	440	300	90	42	25	907

In Spain, each producer's average individual output is around 1 500 kg of olive oil, i.e. three times that of Italian and Greek producers. In Portugal and, above all, in France, the average output per producer is very low.
In all the Member States concerned, concentration has occurred throughout the olive oil industry over the last few years. There is, however, a marked difference between Spain, where large cooperatives extract and bottle oil from their members' olives, and Italy and Greece, where a very large number of small mills located close to the growing areas often work under contract for producers, who prefer to maintain ownership of their oil. The output of Italian and Greek producers is often pooled by middlemen at the marketing stage.
The professional organisations representing the sector at European level bring together industrial firms, traders and producers, but they are not set up on an interbranch basis:
- FEDOLIVE, the Federation of the Olive Oil Industry, is a sector-specific organisation composed of representatives of the industry in the five Member States which produce olive oil: Sevitel (Greece), Assitol (Italy), Federoliva (Spain), Casa do Azeite (Portugal) and Fedico (France),
- COCERAL, the grain and feed trade committee of the EC; animal feed; oilseeds, olive oil, oils and fats and agricultural supplies in the EU, comprises different agricultural trade organisations, including the following in the olive oil sector: Federolio (Italy), Anierac (Spain), Esvite (Greece) and Fedico (France),
- COPA/COGECA represents the producer organisations and agricultural cooperative groups in the EU. COPA is made up of 29 organisations and COGECA 17 member and 4 associate organisations. The secretariat is shared between them and has 50 working groups, one of which specialises in olive oil.

At ground level, the 366 producer organisations and their 9 associations that are recognised under Regulation No 136/66/EEC help to administer production aid, but have no specific tasks in relation to quality. For the marketing years from 1998/99 to 2000/01, these producer organisations withhold 0.8% of the production aid payable to their members for the purpose of covering their running costs. The organisations account for just under half of the producers in Spain, but almost all producers in Italy and Greece.

8 Council Regulation (EEC) No 2092/91 of 24 June 1991 on organic production of agricultural products and indications referring thereto on agricultural products and foodstuffs (OJ L 198, 22.7.1991, pp. 1-15).
9 Council Regulation (EEC) No 2081/92 of 14 July 1992 on the protection of geographical indications and designations of origin for agricultural products and foodstuffs (OJ L 208, 24.7.1992, pp. 1-8).
10 Commission Regulation (EC) No 2815/98 of 22 December 1998 concerning marketing standards for olive oil (OJ L 349, 24.12.1998, p. 56).
11 Commission Regulation (EC) No 528/1999 of 10 March 1999 laying down measures to improve thequality of olive oil production (OJ L 62, 11.3.1999, p. 8).

1.2.2. Categories of olive oil produced and sold

The proportions of extra virgin olive oil and lampante virgin olive oil can vary markedly depending on conditions in the particular year, but in recent years important technical developments have permitted a considerable reduction in the lower quality categories. Up to less than ten years ago the proportion of lampante oil generally reached 30–40%.

Production breakdown (%)	EXTRA VIRGIN		VIRGIN		ORDINARY		LAMPANTE	
marketing year	1998/99	1999/00	1998/99	1999/00	1998/99	1999/00	1998/99	1999/00
SPAIN	59	50	20	28	15	9	6	13
ITALY	65	67	20	23	6	3	9	7
GREECE	85	85	5	5	5	5	5	5
PORTUGAL	63	43	25	30	8	17	4	10

Source: Member States' statistic.

At consumption level the "virgin olive oil" and "olive-pomace oil" categories are fairly marginal. Sales are primarily of categories "extra virgin olive oil" and "olive oil", i.e. a blend of refined olive oil and virgin oils other than lampante. The relative shares of these two categories vary markedly by country, this being chiefly a matter of diversity of culinary tradition. The trend is upwards for extra virgin and downwards for virgin. "Olive oil", milder, remains appreciated for certain culinary uses and by some new consumers primarily interested in the product's nutritional qualities.

The breakdown of the consumption percentages for the two main categories is (1)	"EXTRA VIRGIN"	"OLIVE OIL"
SPAIN	20	80
ITALY	70	30
GREECE	82	8
PORTUGAL	37	63
FRANCE	100	0
OTHER COUNTRIES	45	55

(1) Orders of magnitude, according to the Member State.

1.3. Quality factors

The main factors that affect or constitute quality in olive oil operate essentially at three stages: growing of olives, production of virgin oils, and blending of the oils sold for consumption.

1.3.1. At the level of olive production

Growing conditions and olive characteristics are often determining factors for the quality of the oil and its sensory characteristics. Thus for example treatment against olive fly and harvesting conditions prevent strong acidity and certain damning organoleptic defects; varieties and their suitability to particular locations provide some of the objective bases for the regional origin idea; agricultural practices have an impact on the image of olive growing and on the environment. Much work has already been done on improving the factors that affect the "basic" and "intrinsic" qualities of olive oils, their typicality and conservation of the environment. However, improved productivity often goes against these measures. For instance irrigation, spreading of fertilisers, excessive systematic phytosanitary treatment, and working of the soil without adequate precautions against erosion have a negative impact on quality in the wider sense.

The framing of agri-environmental rules and action programmes is rightly decentralised to regional level so that local diversity can be taken into account to the maximum. Community financing under the rural development schemes and the market organisation is provided. Better co-ordination and a general normative base appear necessary however.

A code of good olive cultivation practice would serve the purpose here. It would also serve to determine what goes beyond "good practice" and could therefore justify specific claims or specific support. The findings of certain studies[12] financed by the Commission as well as analysis presently realised by the IOOC could be used in framing such a code.

12 The environmental impact of olive oil production in the European Union. May 2000. To be published shortly.

1.3.2. At the level of virgin olive oil production

The quality of the oil taken directly from the olives depends of course on the latter but is also affected by the extraction conditions. Many techniques and pieces of equipment serving a purpose on their own or in ideal combinations can be used. Three groups of difficulties emerge.
For the whole range of production stage problems for virgin oils, a code of good mill practice would be useful as a reference, notably for minimum conditions for certain quality claims. All industrial and commercial practices are presently under consideration within the IOOC.
Potentially useful work is in progress, and more is needed, on automatic checking of the operation of mills, and in particular of certain parameters that affect quality.

1.3.2.1. Temperature, duration and extraction additives

The appropriate temperature and duration for oil extraction depend on the state of the olives. For healthy ones a temperature below 30° allows the bulk of the oil to be extracted while optimising the organoleptic potential. For damaged olives a higher temperature is needed to obtain good extraction yields but reduces the "intrinsic" qualities and from 60° results in deterioration of the oil and its basic qualities.
A relatively low temperature can be offset from the oil yield angle by a longer period of kneading the olive paste. But too long a period, beyond 60 to 90 minutes, reduces the natural antioxidants and the vitamins in the oil.
Adjuvants such as talc and certain enzymes are increasingly being used to treat difficult pastes or improve yields at reasonable temperatures and duration. The action of talc appears to be purely mechanical and if all residues of it are eliminated there is no alteration of the oil. Enzymes on the other hand act bio-chemically and reduce the antioxidants and volatile compounds.
Owing to lack of retrospective checking procedures the Community rules are rather vague on these aspects. The definition of virgin olive oils in the Annex to Regulation No 136/66/EEC states that these are *"oils obtained from the fruit of the olive tree solely by mechanical or other physical means under conditions, particularly thermal conditions, that do not lead to alterations in the oil,..."*.
In the absence of an effective simple method for detecting over-high temperature or excessively long kneading of the olive paste it is difficult to regulate such parameters at present. A general contribution to quality would be made however by a reasoned reduction in the acidity limits for certain oil categories.
On technical adjuvants the rules should clearly specify exclusion of all that have a chemical or biochemical action or could leave traces detectable in the olive oil and so compromise its image as a natural product.

1.3.2.2. Disposal of residues and waste

In general the oil extraction systems produce relatively dry pomace which is treated with solvent to obtain crude olive-pomace oil and leave a residue recycled as a fuel.
But they also produce a large volume of liquid extracts that are polluting and difficult to eliminate.
Extraction by two-phase centrifuging, very common in Spain, uses less water and so yields fewer of the liquid extracts but gives a very moist pomace that cannot be directly treated. This is often dried by evaporation in large basins, which arouses concern about environmental risks.
There are no specific Community rules but much national and regional legislation, sometimes inconsistent, and some of the various projects implemented have received Community aid. In most cases the combination of suitable technologies is a local matter but some coherence would be achieved by common guidelines. This could be included in the code of good practice for mills.

1.3.2.3. Oils from a second mechanical extraction

Two-phase centrifuging produces from the olive paste moist and fatty pomace containing 6-to-9% oil that can be retreated, often at high temperature, using the same machinery, i.e. the centrifuge is loaded with most and fatty pomace instead of olive paste. This yields an oil and a moist exhausted pomace containing less than 4% oil. It is difficult for the extraction industry to make a profit by using solvents on this remaining pomace to yield olive-pomace oil and it constitutes a polluting residue that is costly to treat. The second extraction oils are obtained mechanically without solvent and are hence not olive-pomace oil under the present definition. But their wax content is too high for classification as virgin olive oils and they are generally diluted with lampante olive oils, so as to meet on average the standards set for that category. Production and dilution of these oils is against the Community rules, which require virgin olive oil to come from the fruit of the olive tree, not from pomace, and not to be mixed with oils of another kind.
These oils, whether diluted or not, are not harmful to health since they are invariably refined, which eliminates the waxes in particular. But they dislocate the market quantitatively and also qualitatively since they are fraudulently sold as lampante although of lower stability than genuine lampante virgin olive oils. Storage without deterioration and refining of these oils are more difficult.

It is very difficult to tell by analysis whether a given oil has been produced by centrifuging pomace or is a mixture with such an oil or is instead a lampante olive oil, genuine but deteriorated owing e.g. to extraction at high temperature. A strong assumption can be made if the wax content increases rapidly on storage. The practice of second mechanical extraction can be detected at mills by examination of stock records or analysis of the oil content of the pomace produced. Research on the identification parameters for oil obtained by centrifuging pomace is working towards simultaneous consideration of the values of the alcohol index and ethyl ester content on the one hand, and the quantity of waxes and erythrodiol on the other. The use of such criteria, which is fairly complex, would still have to be examined for the virgin olive oils of certain regions and would necessitate redefinition of the distinction made by Regulation No 136/66/EEC between lampante virgin olive oil and crude olive-pomace oil.

1.3.3. Oils sold for consumption

1.3.3.1. Virgin oils

Blends of virgin oils other than lampante are normal practice, generally useful or necessary from an economic point of view, but also to construct a quality esteemed by consumers or guarantee them stability of quality. The oils of certain varieties of olives, even of certain locations, have sometimes to be blended among themselves to give a product benefiting from their respective characteristics as to e.g., structure, stability and taste.
Blending also serves the purely commercial function of diluting low-quality oils, notably those of fairly high acidity.
There is no analysis method to determine the constituents of virgin olive oil blends and still less to judge the purposes, qualitative or otherwise, for which the blend was made. It is certain however that for the extra virgin category a reasonable reduction in maximum acidity would limit the possibilities of abuse.

1.3.3.2. Refined oils and their blends with virgin oils

Refined olive oils, generally from lampante olive oils, are colourless, odourless, tasteless and of very low acidity. They are sold for consumption in the form of blends with virgin oils other than lampante under the category name “olive oil”.
The presence of both virgin oil and refined oil in an “olive oil” can be attested by analysis. But the total absence of virgin oil is more difficult to prove and there is no method for checking the composition of these blends. Nor is the minimum virgin oil content regulated. Hence the category displays great heterogeneity, ranging from refined oils to which a drop of virgin oil has been added to blends with marked sensory characteristics.
The unaware consumer of an olive oil is somewhat imposed on by this use of the generic name for olive oils as the name for one particular category. He may also be disconcerted by the organoleptic heterogeneity of the olive oils offered to him. There is also a market for olive oil blends containing very little virgin oil, especially for preserves and industrial cooking.
Given the difficulties of checking the composition of “olive oils”, rules here are a problem, but an improvement in consumer information seems necessary.
Refining plants are able to deodorise virgin oils that are only slightly acid but graded lampante given their sensory defects. Like other types of partial refining, this gives an oil that can be fraudulently termed “virgin” or “extra virgin”.
The lack of an analysis method for detecting this type of fraud (difficulties in finding one persist) mean that no figure can be put on its extent but it appears to be of more than negligible economic importance. One path to be explored is to find a tracer, with no impact on the quality of the refined oil and hence safe to human health, that would have to be added by mills to all lampante virgin olive oils and would withstand refining.

1.3.3.3. Mixtures of olive oils and seed oils

Such mixtures fraudulently declared and sold as olive oil do great harm to the sector. Analysis methods for detecting them are not always sensitive enough, notably when the oils in question are similar in fatty acid composition. This is particularly so with deodorised hazelnut oils, difficult to detect even when present in fairly high proportion in the mixture. Research is active in this area and at least some partial solutions may be available soon.
Mixtures of olive oil and seed oils declared and sold as such are not prohibited under Community rules but Member States’ views on them diverge. The products must respect national legislation adopted under Directive 2000/13/EC, which stipulates:
- in Article 2, that the labelling must not be such as could mislead the purchaser to a material degree,
- in Article 7, that the quantity of an ingredient emphasised on the labelling must be stated.

Member States producing olive oil claim from past experience that the mixtures in question benefit from the repute of olive oil but are not of the same nutritional value. Thus they are sold at relatively low prices and this distorts the market. At the moment, apart from France, the producer Member States and also Belgium prohibit production for consumption on their territory of mixtures of olive oils and seed oils, on the grounds of difficulties of quantitative determination of the olive oil in the mixture. There is in fact no analysis method for doing this. But they authorise such mixtures for export to other Member States and third countries.

In the other Member States these mixtures meet consumer demand for an only slightly pronounced olive oil flavour. Their attitude is that olive oil content can be checked from stock records just as in the case of other food mixtures on the market.
Producer Member States want a Community prohibition on olive oil/seed oil mixtures but most of the others object.
From the point of view of the legislation, the Commission considers that a Community measure imposing a total, unconditional ban on mixtures of different oils could be justified only if it were regarded as essential for the operation of the common organisation of the market in olive oil. There would appear to be no such justification at present. The mixtures in question are marketed with a clear indication on the label of their composition and nature.
The argument that checks to ascertain the exact composition of the mixture are difficult does not justify such a radical measure as a ban. Such a measure would be out of proportion and would discriminate against a category of operators in the Community who otherwise comply with the rules on consumer information and who are responding to market demand.
On the other hand, in order to preserve a certain quality and a certain tradition of production at local level, a Member State might wish to maintain national rules which, without obstructing imports or exports of the mixtures, would prohibit the production of such mixtures for domestic consumption.
The present situation thus seems satisfactory in the light of the Community rules, but changes involving a general ban on mixtures of olive oil and seed oil could not be imposed.
On the other hand, in view of the importance attached to the matter, there could be Community rules specifying what is to appear on the labels of such mixtures, e.g. information as to whether the product is an olive-oil-"based" product, "contains" olive oil or has olive oil "added". This approach needs to be carefully considered, in view of the complexity it would introduce for the consumer.

NEW DESCRIPTIONS AND DEFINITIONS OF OLIVE OILS AND OLIVE-POMACE OILS

1) *Crude* olive oil:
Oils obtained from the fruit of the olive tree solely by mechanical or other physical means under conditions that do not lead to alterations in the oil, and which have not undergone any treatment other than washing, decantation, centrifugation or filtration, to the exclusion of oils obtained using solvents, *adjuvants having a chemical or biochemical action,* or re-esterification process and any mixtures with oils of other kinds.
Virgin olive oils are *exhaustively* classified and described as follows:

a) Extra virgin olive oil:
crude olive oil having a maximum free acidity in terms of oleic acid, of *0.8 g per 100 g,* the other characteristics of which comply with those laid down for this category.

b) Virgin olive oil:
crude olive oil having a maximum free acidity in terms of oleic acid, of 2 g per 100 g, the other characteristics of which comply with those laid down for this category.

c) Lampante olive oil:
crude olive oil having a free acidity in terms of oleic acid, of more than *2 g per 100 g* and/or the other characteristics of which comply with those laid down for this category.

2) Refined olive oil:
Olive oil obtained by refining virgin olive oil, having a free acid content expressed as oleic acid of not more than *0.3 g per 100 g* and the other characteristics which comply with those laid down for this category.

3) *Standard* olive oil:
Olive oil obtained by blending refined olive oil and crude olive oil other than lampante oil, having a free acidity content expressed as oleic acid of not more than *1 g per 100 g* and the other characteristics which comply with those laid down for this category.

4) Crude olive-pomace oil:
oil obtained by treating olive pomace with solvents *or oil corresponding to lampante olive oil, except for certain specified characteristics,* excluding oil obtained by means of re-esterification and mixtures with other types of oils, and the other characteristics which comply with those laid down for this category.

5) Refined olive-pomace oil:
oil obtained by refining crude olive-pomace oil, having a free acid content expressed as oleic acid of not more than *0.3 g per 100 g* and the other charachteristics which comply with those laid down for this category.

6) Olive-pomace oil:
oil obtained by blending refined olive-pomace oil and crude olive oil other than lampante oil, having a free acid content expressed as oleic acid of not more than *1 g per 100 g* and the other charachteristics which comply with those laid down for this category.

OPERATIONAL CONCLUSIONS

The implementation of a quality strategy for olive oil calls for concerted action. Guidelines for the various parties concerned are needed so that action can be coordinated over several years. The measures summarised below would enable the scheme to be introduced gradually, starting to take effect from 2001/02 onwards. By 2003/04, all the measures might be put into practice.

1. COUNCIL REGULATION

Amendment of the Council Regulation (Regulation No 136/66/EEC) is a legal prerequisite on which the preparation and adoption of most of the other measures envisaged will depend. The adjustment should concern part of the classification of olive oil and olive-pomace oil on the one hand, and the organisation of operators' activities on the other.
A period of two marketing years is needed in both cases between the adoption of the changes and their actual implementation. For classification, this period will enable the industry to adjust, old stocks to be used up, the provisions of the IOOC agreement to be made compatible and the Codex and customs regulations to be amended accordingly. For producers' organisations, the two-year period will enable the Commission to draw up detailed rules, and the operators to form groupings and draw up their programmes.
A Council Decision adopted before 1 November 2001 would enable the scheme to be introduced in the 2003/04 marketing year.

1.1 The classification of olive oil and olive-pomace oil

The changes would be as follows.
- the generic name to be used by professionals of the sector in place of "virgin olive oils" would be "crude olive oils". The words "particularly thermal conditions" would be deleted,
- the name of the category of "olive oils" authorised in the retail trade would be changed to "standard olive oils",
- the acidity of extra virgin olive oil would be cut from 1° to 0.8°, and the category of ordinary olive oil included in with lampante olive oil, - the acidity of refined olive oil and refined olive-pomace oil would be cut from 0.5 to 0.3°, and that of standard olive oil and olive-pomace oil from 1.5 to 1, – the limit between crude olive oil and crude olive-pomace oil would no longer necessarily be dependant on the solvent-extracted criteria,
- the use of adjuvants having a chemical or biochemical action for extracting crude olive oil would be excluded.

1.2 Operators' organisation and activities

The Council should decide, before the start of the 2001/02 marketing year, that the aid scheme to be introduced if necessary under the common market organisation in oils and fats will include, as from the 2003/04 marketing year, a possibility for the Member States to set aside funds for full or partial financing of programmes of activity relating to:
a) sector and market management,
b) improving production quality and environmental impact,
c) certifying and safeguarding the quality of olive oil.

It should also decide straight away that the Community will contribute financing of 100% to sector and market management. For improving production quality and environmental impact, the financial contribution should be 75%, and for certifying and safeguarding the quality of olive oil, it should be 50%. Moreover, the operators involved would have to make a financial contribution to the programmes in receipt of Community part-financing, amounting to at least 25% of expenditure on certifying and safeguarding quality.
Lastly, the Council should state that the programmes are to be presented for certain activities, in accordance with a procedure to be determined, by groupings of operators approved in accordance with certain criteria. The procedures for programme approval, the eligible activities, and the approval criteria for groupings would be established by the Commission in the course of 2001/02.

2. COMMISSION REGULATION

Besides the arrangements to be established for organisation and activities of operators, the Commission rules could deal with the following points, on the basis of Article 35a of Regulation No 136/66/EEC.

2.1 Panel test

Inclusion within Regulation (EEC) No 2568/91 of the new IOOC panel test, to be applied by an accredited expert.

Disputing of organoleptic qualities by this expert in relation to "virgin" and "extra virgin" olive oil would have to be confirmed by three approved panels to be enforceable against the person concerned.
The decision should be taken quite quickly, so that the Codex Alimentarius can be amended accordingly.
The actual application of the decision would require an adjustment period of several months to take account of existing stocks and establish the necessary organisations.

2.2 Designation of origin

Renewal after 1 November 2001 of the provisions of Regulation (EC) No 2815/98, which are in force until 31 October 2001. However, where the origin was not specified in accordance with the rules currently in force, the label would have to indicate the actual situation.
To give the sector time to adapt, the new provisions would come into force after a few months.

2.3 Case of non-standard olive oil

Introduction of a provision whereby a Member State may authorise in certain cases, under its supervision, olive oil manifestly obtained from olives but outside the norms on one criterion to be brought up to standard.
In principle, this should be applicable straight away.

2.4 Limit on package size

Olive oil sold on the retail market should be made available in packages of no more than 5 litres, with a non-re-usable seal. In view of the changes in habit that this may involve in some regions, this requirement should be adopted in the course of the 2001/02 marketing year to give advance warning of its application from the 2003/04 marketing year.

2.5 Labelling obligations and prohibitions

Inclusion in Regulation (EC) No 2815/98 of an obligation to specify on the label the category of olive oil or olive-pomace oil for sale. It would also be prohibited to indicate the acidity of olive oil as a presumed quality criterion.
To give the sector time to adapt, these measures would not be applicable for the first few months after their adoption.

2.6 Standards for optional indications

From 2001/02 onwards, new standards for concepts of economic importance for extra virgin olive oil, as required, should be introduced into Regulation (EC) No 2815/98. For example, claims concerning first cold pressing, fruity taste, or variety of olives.
The timing of the introduction of the new standards should reflect the need to adjust to market requirements.

3. OTHER INITIATIVES

3.1 International bodies

- The IOOC should be asked to go on its work and draw up a code of good practice for olive growing and a code of good practice for oil mills and other industrial and commercial levels as trade reference points to be used in particular for the purposes of laying down Community rules.

- The Codex Alimentarius rules on olive oil are to be revised in 2001. This could be an opportunity to introduce the new panel test, if the other elements of the proposed rule are accepted.

3.2 Chemical research and expert work on olive oil

- A method for detecting fraudulent mixtures of olive oil and hazelnut oil is urgently needed, and existing methods must be improved,
- a method for detecting deodorised olive oil or a tracer for lampante olive oil resistant to refining should be developed,
- a decision-schema for applying methods of analysis for olive oil and olivepomace oil needs to be developed,
- facilities for checking quality parameters in mills need to be developed.

THE MARKET

THE INTERNATIONAL AND EUROPEAN FRAMEWORK

The world production of olive oil is concentrated in Mediterranean Countries; only recently olive tree cultivation is becoming widespread in some coastal Countries of central-southern America and in Australia. The production level has stabilized around 2.5 million tons, with a slightly increasing estimated trend. 94% of world production is concentrated in the Mediterranean basin.
The European Union, with about 2 million tons of produce, accounting for 80% of world total, represents the main world producer (with almost all production distributed among Spain, Italy and Greece). Nearly half of the European production is made in Spain, and 30% in Italy.
Among the main producing areas, Africa follows with over 10% of world production, and with Tunisia that contributes – alone - to 60% of area production.
The Asia accounts for 6.5% of olive oil world production, nearly 90% of which is covered by Turkey and Syria.
The American Continent, with a production slightly exceeding 11,000 tons, over 70% of which is concentrated in Argentina, contributes to 0.7% of world production.
With an increase over the last few years, world consumption amounts to around 2.8 million tons. Over 70% of world consumption is concentrated in the European Union. A substantial consumption is also concentrated in the remaining producing countries of the Mediterranean Basin, whereas the US market stands among the countries that, although not having a production tradition, own a significant share in oil consumption.
Within the European Union, the consumption structure is reversed compared to the production structure. Italy is by far the most important consumer, with nearly 40% of EU consumption, whereas Spain slightly exceeds 30%.

ANALYSIS AND TRENDS OF OLIVE OIL DEMAND

The structural trend of olive oil demand in the different consuming countries, measured by the variation rate over the last decade, shows a situation characterized, apart from the positive trend of the Spanish, Italian and Greek markets, by a slight decrease in oil demand in the remaining Mediterranean countries. Differently for countries considered as "new consumers" there is an increase in olive oil demand in most of countries; in particular, significant variation rates were recorded in USA, Japan and United Kingdom, where olive oil consumption has been constantly increasing over the last years.
The expansion potential in the consumption of olive oil all over the world is strictly related to the ratio between the consumption per head of olive oil and vegetable oils. In fact, the scarce incidence of olive oil percentage out of total vegetable fats consumed leads to state that there are important possibilities to increase the world consumption of this product. Naturally, while assessing olive oil penetration in the different Countries, a distinction must be made between the traditional consumption areas, which coincide with the producing Countries of the Mediterranean basin, and the new consumption areas. Among the latter, a differentiation must be made between the markets that initially availed themselves of strong migration flows coming from producer countries that brought with them the food habits of their countries of origin, and those that were recently conquered by the Mediterranean diet and by the health qualities of this product.
Among the traditional oil-producing and consuming countries are Greece with over 66% of olive oil production out of total vegetable oil and 18.5 Kg of per head consumption, Italy with over 47% and 13.1 Kg of per head consumption, Spain with 43% and 12.1 Kg of per head consumption.
Australia ranks first among the countries that are not traditional producers, with a per head consumption of nearly 1.4 Kg, followed by France, Switzerland and Canada. In general, the higher dynamic in consumptions over the last decade is ascribable to the group of non-traditionally consuming countries (Australia, Canada, USA), where market development is also accompanied by a growing quality appreciation.
The United States, with nearly 200,000 tons of olive oil, is the main non-traditional consuming market.
Furthermore, there is a growing interest for extra-virgin olive oils with a clear regional origin: the demand is characterized of a section of consumers with a high cultural level and high purchasing capacity, present in most of western markets and in emerging economies including China and other South-East Asian countries.
The most important northern and central European countries show significant consumption percentages.
More and more EU and non-EU markets record a significant growth in the consumption of olive oil. This growth has been in place for several years and, with a higher knowledge of this product and its penetration among families, is increasingly moving towards the extra-virgin oil category. These are market where interesting selling prices are obtained.

SOME CONSIDERATIONS FOR A SUITABLE DEVELOPMENT OF THE OLIVE OIL MARKET

The present scenario of national and international markets is characterized by two fundamental events for further development: first of all, the future market opening to South-Mediterranean countries makes the competition on medium-low quality oils more difficult; secondly, the reform of the common organization of the market, amending the procedures of aids granting to olive growers, moves the production axis towards quality.
As regards the future evolution of demand and supply of olive oil, and on the basis of regulatory and macro-economic factors that influence the olive-cultivation sector, it is considered that the whole oil sector, while facing present changes according to the situation mentioned above, shall take the following into consideration:

- The per-head consumption of olive oil, in consideration of its health qualities, is slowly but increasingly growing;
- The markets undergoing the highest increase are the United States, Canada, Australia, and the emerging Asian countries;
- The growth in volumes exported is presently possible only through a boost to consumption (take-over of consumption shares of alternative products and increase in the consumption per head);
- Virgin oils are consolidated vs. the refined ones;
- Product differentiation is a winning element, as well as territorial peculiarities;
- Product promotion and communication play a fundamental role to differentiate oil identity from a quantitative perspective and in the quality/price ratio.

In brief, the conversion of the potential development of oil consumption entails that operators promote active marketing policies, bearing in mind the characteristics of both markets and potential consumers. In this connection, it must be considered that consumption growth will depend on the one side on the demand of a part of population concerned about food quality rather than price level; on the other side, it is considered that there is an important growth margin in the group of families consuming two types of oil (olive and seed oils) if price ratio presently unfavorable to olive oil is modified.

THE DUALISM OF RELATIONS BETWEEN OLIVE GROWING AND ENVIRONMENT, AND THE CRISIS OF THE DOMINANT MODEL

Agronomic science considers the land as a limited resource that shall therefore be preserved and protected. On the other hand, the extreme exploitation of resources to obtain the maximum productivity has led to consider rural soils as a simple inorganic support to farming.
The several activities and interventions that men developed throughout the territory pose severe problems as to soil conservation, in the sense of both protection of ecosystems and maintenance of productivity.
Farming is responsible for the several changes that have contributed to the decline of the species. The most evident changes in the landscape are found where hedges were remove, where drainage operations were carried out, or where the unification of agrarian parcels has created a uniform agricultural landscape. Also the transformations made on the traditional agricultural systems, such as the replacement of old olive-yards and orchards with modern plantations, hugely influence the diversity of species.
These are the most visible changes; more significant, however, are the invisible changes such as pollution o eutrophisation of habitats and biotopes.
Soil erosion represents a strong source of emission of fertilizers and polluters in the environment, in particular in southern European hilly and mountainous regions.
Over the last years, the debate in this sector on the limits of such development led to a reform of the common agricultural policy and of the rural development that placed at the centre of its strategies the multifunctional role of agriculture before the production-based management of the last sixty years, in terms of food production, soil protection, safeguard of groundwater and conservation of biodiversity.
In fact, the measures provided for in the CAP reform envisage - in order to access the single payment - the compliance with environmental protection rules (conditionality) and impose a higher attention to olive-yard agronomic practices.
The sector perspective and the approach based on the single farm must be overcome; only in this way there will be a real progress towards an environmentally healthy agriculture: this may happen only if the agro-food improvement becomes an integrated element in the wider strategies for the rural development of the territory.
The olive sector in particular, due to its economic function as well as its environmental, social and cultural value, plays a fundamental role for the development of rural territories, both in areas with a strong anthropic pressure and in marginal areas where there is a strong risk of land abandonment. Olive trees are often located in difficult areas with strong limitations of use, and this represents one of the very few present possibilities for environmental utilization and protection.
Moreover, the presence of olive trees represents one of the elements that mostly contribute to characterize the typical rural landscape of the inner hills that are mostly referred to, that were harmoniously shaped by men during the centuries.
Similarly important is the social role played by olive cultivation that involves several operators: professional farms, part-time farmers - often old men - for whom this represents an additional source of income but also an occasion for leisure and relax, as well as a source of supply of a good product for self-consumption. In this sense, olive trees contribute to ensure the presence of men in the countryside, and thence once again the protection of the territory through their work.
The olive-cultivation sector shows another important aspect from the viewpoint of relation with the environment: the management of oil-mill waste that, if suitably used, may represent an important resource. Wastewaters shall not be considered as a troublesome waste of oil-press, but also as a potential energy source.
Due to their high load of organic substances, oil-mill wastewaters represent one of the most significant environmental problems in the Mediterranean olive-growing regions (*their polluting potential is 100 times higher than household wastewater)*. One cubic meter of wastewater contains:

- 50 - 100 kg of organic mass,
- 20 - 30 kg of minerals

The CMO reform of the oil sector has set the principles for a renewal of the oil-press sector in terms of organization and production efficiency; based on this, the management of oil wastes cannot leave aside some economic and environmental impact considerations, namely relating to their possible sustainable use: using them as manure and fertilizers or enhanced as biomass for energy production.
Agronomic use is regulated under Law no. 574 of 11 November 1996, “New rules on agronomic use of wastewater of oil-mills”.
Art. 1 of said Law states that oil-press wastewaters that underwent no treatments and received no additives - exception made for paste diluting or equipment-cleaning waters - can be agronomically used through a monitored distribution on rural lands.
However, the experiences gained in the field of wastewater disposal show us that the direct spreading, although appearing as a very interesting system for disposal, presents a series of uncertainties and aspects to be deepened, relating to safety problems and constraints depending on weather conditions (generally unfavorable during oil harvests).

Furthermore, there is a shortage in studies relating to the types of sites suitable for the spreading of said waste.
Composting appears as the most interesting technique since it allows a controlled spreading of organic matter on rural lands that are presently impoverished in terms of nutritional elements; furthermore, it allows to carry out processes suitable to manage organic substances coming from other agro-industrial sectors.
In order to find a satisfactory solution for the disposal of wastewater from the technological and economic viewpoint, the research system undertook the task to optimise the exploitation of oil-mill wastewater from both the energy and material point of view, in order to take it back to the regular cycles of natural disposal. Several studies and pilot projects on the treatment of wastewater are carried out, relating to the transformation of oil-production waste into energy (biogas, bio-diesel) and valuable organic products (highly anti-oxidation phenolic substances, fertilizers).
Energy enhancement of refuse of processed olives as biomass for the production of heat and electric energy is regulated under the new "*norms for the rational use of energy, energy saving, and development of energy renewable sources*" that, in agreement with the EU energy policy, provide for a higher contribution of renewable energy sources to the production of electricity in the national and EU market" also with a tariff-based incentive system (emission of "green" certificates). Moreover, electric energy producers must produce 2% of electricity through plants fuelled through renewable sources (every year, this percentage increases by 0.35%); this energy is entitled to have a real-time supply priority in its network emission.
In Italy, the energy supplied in 2003 by renewable sources accounts for 9% of overall national consumption; in this framework, bioenergy contributes by nearly 30%.

THE MULTIFUNCTIONAL ROLE OF OLIVE GROWING AND RURAL DEVELOPMENT

The enhancement of local resources and the integrated and balanced development of rural areas are among the main objectives of the agricultural policy aiming at the reversal of the trend towards the socio-economic decline and depopulation of country areas. The concept of localism, which is concentrated on environmental-territorial resources, niche products, the integration between agriculture and tourism, agriculture and environment, agriculture and traditions, therefore, the diversification of agricultural activities and multifunctionality, is then added to the globalization of some kinds of farming - as the mass production of cereals, meat, etc.
Multifunctionality is based on a project through which farmers undertake to develop an agricultural activity destined both to the production of foodstuff and the creation of wealth, and the safeguard and management of natural resources, landscape preservation, biodiversity preservation, territorial re-balance towards employment. The first condition for multifunctionality is the innovation of business organization and production techniques. Multifunctionality is accompanied by re-organizational processes, according to which the company acquires some functions and processes that once were not allowed and delegated to third parties.
The young are certainly more prone to this new frontier of agricultural development. The responses of companies show that: in the central-northern area, 17% of young entrepreneurs say they have rural tourist facilities inside their companies, compared to 8.7% of the total average; at the national level, the difference is lower, with 7.2% of the young versus 5% of the total. The regions that best react to that are vocational regions: Tuscany and Umbria. The activities linked to tourism are: craftsmanship, education, guided tours, with a meaningful presence of young companies, always beyond the total average. Particularly, craftsmanship activities within young olive-growers are more numerous in the regions where the tourism market is more differentiated and linked to traditions, like Tuscany, Latium and Sardinia.
Another fundamental activity is that of road-vegetation and interfarm road maintenance, while underwood maintenance is still a marginal activity with interesting development possibilities concerning the energy sector as a possible supplier of combustible biomasses.
Briefly, oil production creates a wide range of pre and post activities, which, because of technical and economical reasons when it reaches a critical dimension, tend to be localized near olive groves. Olive growing may then be the driving factor of an economic and social development of the regions where it exists. Operators' organizations established within the CMO in olive oil and table oils are entitled to manage this kind of development, given their history made of relationships with the productive structure of the territory, starting form the new community programming period for rural development 2007-2013 with a strong role to play:

- at the programming level
  - participating in consultation tables
  - carrying out information activities and actions to enliven the debate
  - defining local needs
- at the level of implementation
  - implementing actor
  - beneficiary of specific actions
  - partner of local partnership
  - to enliven, inform and plan activities

PROMOTION

THE PRESENT SITUATION

Olive oil is an integral part of the cultural and gastronomic heritage of the Mediterranean countries. Its peculiar organoleptic, nutritional and therapeutic characteristics have been confirmed at the scientific level.
In the last few years, the oil sector was the object of a thriving activity to enhance and differentiate productions: from Designation of Origin, to some productive process certification, to organic farming and industry certification.
The rising interest of consumers towards these particular kinds of products is widespread also in non traditionally oil producing countries.
In a market where relatively "new" products are increasing in number, it is strategically important to ensure correct information to consumers who, in some cases, even today, do not understand the fundamental difference between "extra virgin olive oil" and "olive oil".
The national olive oil sector is controlled by the oligopoly of small/medium-sized enterprises, together with a crowd of micro producers supplying mostly local markets. Simple cost strategies and investment in communication activities are hampered by the production trends, production costs, distribution channels and the conformity with particular producing processes.
In this framework, producers opt for market segmentation, relying on the tradition of typical food productions in Italy, and offer certified quality products. These strategies are focused on the process and the product, while, because of the above, cannot effectively play on other marketing leverages, particularly distribution and promotion.
Also, private brands - connected with the distributor's sign - which are more and more widespread, enhance the industry competition and prevent producers from implementing strategies for the product identification.
It is in this connection that the sector should be protected by aiming at developing and promoting those oils that refer to a particular territory and by enforcing "commodity promotion" tools, namely, promotional campaigns made and financed by state organizations and institutions, trade associations to the benefit of all the industry producers.

PROMOTION STRATEGIES

Promotions are the communication tools of a company.
They may address suppliers, the sales team or, rather, customers and/or final consumers. However, making people choose their products is the utmost target. Promotional activities must have clear and well-defined aims.
Usually, the main goals are:

- to improve and disseminate the corporate image and product;
- to highlight some characteristics of the product;
- to boost sales.

Hardly goals are part of a clear strategy and final decisions are often the result of strategies that are adjusted to the operational environmental changes.
The message to be conveyed through promotional activities must be attentively stated, in the case of olive oil; the attention should be put on trueness to type, health and naturalness of products and the usage of traditional producing processes. Namely, promotions try to ensure and foster the characteristics that are usually attributed to olive oil: i.e. a simple product with strong nutritional characteristics, a particular taste, aroma and colour linked to the land of origin and production.
Usually, the sensorial characteristics influencing final consumers while buying olive oil are the color, the odour and taste. Particularly, the colour, for extra virgin olive oil consumers is remarkably important, since it is immediately recognizable.
In order to push consumers to buy extra virgin olive oil, the colour should be visible and consistent with their expectations since it evokes sensations concerning the taste.
However it is worthwhile mentioning that if for producers the chemical and physical values and the sensorial analysis are a countercheck on the product quality, that "actual" quality is not automatically understood and acknowledged by consumers; instead, most of them choose on some grounds that are not those of the real and actual value of the foodstuff.
Therefore, consumer's behavior is not directly connected with the actual quality of the product, instead, it is related to those elements that he/she perceives as quality marks; it would be wise to implement an education campaign to guide consumers on their choices and help them make rational choices. To know olive oil means to know the culture, history and traditions. These are the messages that should reach the consumer, mostly the young, in order for them to know and appreciate the good products of our land and foster their desire to see how olives are harvested and how does an olive oil mill work.

PROMOTIONAL TOOLS

Advertising is the most widespread promotional tool. It aims at informing and properly educate final consumers on the characteristics and usages of a product. Advertising messages try to present the product as the most satisfactorily in terms of meeting the demand and, possibly, trigger unconscious needs.
According to the target, the company chooses the most suitable advertising tools and means to carry out its actions to persuade. In the case of convenience goods, among which olive oil, companies choose those means that address wide consumer segments (TV, radio, billboards). In case of small and medium-sized enterprises of the olive oil sector, given the limited amount of money allocated to this investment, advertising activities are limited to brochures and folders to be handed out in sales points and by distributors, while magazines and TV are not widely used. An increasing number of companies is starting to use its Internet site to communicate about the product, following a niche strategy.
The brand is one of the fundamental tools to mark, ensure and guarantee the production quality. Indeed, it indicates the name chosen to mark that product and tell it apart. Basically it connects the market to its sources because it allows consumers to identify the skills, reliability and quality acknowledged to that producer by buying its products.
The brand may be an independent one (belonging to one company only) or a collective one (umbrella brand) encompassing a group of producers thus creating a coordinated image for great competitors and consumers.
Usually, umbrella brands imply a solid ground, made of the farming, processing and production techniques stated in the product specification created ad hoc for that kind of oil and group of producers. The umbrella brand represents producers and ensures the product quality, but it also indicates and fosters the territory and is then linked to its image, associating the oil characteristics to the tourist-cultural attractions.

PROMOTION AS A TOOL TO FOSTER CONSUMPTION EDUCATION

The olive oil industry, with its producers, mills and trade must contribute to a greater extent to the product promotion to final consumers, meaning, spreading the organoleptic and nutritional characteristics of quality olive oils; that should also mean to develop some hedonistic behaviors, that, as it happened for other high quality products of the European gastronomy - such as wine - laid the grounds to their success on the market.
Particularly, extra virgin olive oil is a pure product, teeming with health-related values and linked to the representation of its production, rich in varieties at the multifunctional gustatory level.
The EU and Member States allocate some resources to the promotion of products on the market, thus enabling producers to plan the right planning of those activities that enhance oil consumption.
The subjects to be developed through promotion programmes are numberless: education actions at schools to raise the importance of food education, supplying restaurateurs with the right knowledge about the differences between the various oils, promoting multifunctional initiatives such as “the oil route” or the “open olive oil mill days”. Taste education on olive oils, through the organization of tasting courses by the Unions of producers, could also play an important role.
In short, spreading the culture of olive oil, how to use it and why, means to aim at:

- presenting oil and its health and nutritional benefits;
- presenting extra virgin oil by increasing the awareness of its virtues and faults (sensorial analysis);
- educating on the distinction between different oils through tasting techniques;
- informing on the right usage of oil to cook, the preservation and presentation techniques.

TECHNOLOGICAL INNOVATION

OLIVE GROVE INNOVATION

Production

One of the most important innovations in terms of farming techniques is certainly that of the rationalization of watering systems through drip irrigation systems. Watering plays a remarkably important role for modern olive growing since it heavily affects various aspects of the plant life cycle. A list of the effects of the right application of irrigation systems on the plant of olive tree is useful to understand its importance:

- higher vegetative development;
- early blossoming;
- higher inflorescence development;
- decrease of ovary abortion cases (loss of fruits);
- better setting;
- larger drupes;
- increase of olive production;
- increase of oil content.

Among all the watering systems, drip irrigation is universally applicable and is the most cost-effective, with the highest irrigation yield and best cost-benefit ratio.
As to productive investments, the new frontiers of olive growing plantations increasingly concern the super-intensive use of soil. To cut production costs, mainly harvesting costs, farmers in Europe and in the new producing countries are increasingly investing in cultivations with 1,400-1600 plants per hectare. In fact, these systems allow for the usage of cultivators with sensing device to manage at best the harvesting, trimming and plant protection product application phases.

Plant protection

In the last few years, the decisive innovation for olive growing was the application of information technology techniques to support plant protection systems. Particularly, thanks to the Internet, more users can share the same database through a widespread, low cost and rather user-friendly means.
One of the most well-known applications is referred to tests on olive tree parasite control through mass trapping: it allows for a constant monitoring of the situation on all the areas which make the object of the test, thus also creating a network of technicians working in the same field.
All the above is translated into the practical possibility of having real time data processing, and thus promptly act on the territory when needed.

Harvesting

Technology means are increasingly used in oil harvesting to cut costs and bridge the price gap with oils originated in highly-specialized plantations, widespread in South America and Australia and plantations of the Mediterranean area where the labor cost is very low. Today, manual harvesting, or the usage of small tools, mainly personal protection devices, are slowly disappearing because of the difficulty in using naked hands. Safety rules provide for the non-usage of ladders and operators to stay on the ground.
On the other hand, mechanical harvesting is increasingly developed; pneumatic, electric or internal-combustion devices hand-held by the operator are part of this system. Today, electric devices are widely used because they can be used in hardly-reachable, narrow areas and by those who do not have a tractor. Shakers may be used in conjunction with bush cutters in small plots of land. New versions are relatively light and effective and are equipped with an adjustable boom to shake higher branches. This in-between mechanization is followed by real mechanical harvesting, with different systems depending on whether olives are still on the tree or on the ground, and on the storing method for transport purposes and conveyance to oil mill.
Mechanical harvesting increases the yield to 25-50 kg/h per operator with 4-8 plants/h, but it implies an organization with at least 3 people with devices, a compressor set, tarpaulins/nets and a tractor.
Mechanical harvesting, on modern plantations with a 6x6 plant arrangement, with tractor mounted shakers and nets over the ground, brings yield at 70-100 kg/h per operator, that is 20 plants/h. The organization is made of 6-8 people with all connected problems of organization and efficiency.

Oil mill innovation

Among the elements that boosted technology innovation in olive oil processing and trade, one can list:

- better scientific knowledge about the positive effects of the product in terms of health and nutrition;
- consumers tend to prefer high-quality products, this fact is proven by the increase of extra virgin oil consumption;
- the need to have higher and constant productive standards resulting from the evolution of the oil mill productive organization, particularly concerning packaging and the new forms of direct marketing (e-commerce, door-to-door sales, rural tourist facilities and catering with typical products, etc…);
- higher attention to low environmental impact production with the reduction, recovery and recycle of oil waste;
- rules providing for plantation hygiene condition and product safety;
- the boost to productive organizations with system certification (ISO 9001) and product certification (PDO, PGI, organic farming).

At present oil mills are oriented towards the rationalization of some operations that are still carried out with "traditional" techniques and systems, in order to reach a better quality control.
Presently available extraction technologies offer a wide range of plantations, systems and variants to perform the separation between oil and olive paste. It is worthwhile pointing out that when olives are of good quality, not spoiled and picked at the best ripening level, do not result in meaningful differences in the qualitative physiochemical standards that substantially depend on the quality of lives. However, they may affect the organoleptic profile of oil and of its minor compounds.
To extract oil, olives must be grinded into a paste that, after adequate mixing and squeezing, produces oil pomace, made of a mixture of vegetable water and oil.
The most interesting technologies are applied to the following steps of oil production.
Through pressing, olives are broken into a paste made of all the vegetable parts of the fruit, ready for next steps. It is a remarkably important step in terms of quality since the way in which the paste is prepared affects both the extraction yield and the oil quality.
Thanks to the discontinuous extraction cycle (centrifugal system), mechanical presses have replaced edgemills.
With presses, the paste may be overheated, causing a deterioration of the oil organoleptic characteristics (heating, metal flavour). The main manufacturers have brought in some innovative elements to mitigate heating with machines avoiding the problem by grinding olives through a "cut" that does not develop heat, with all the relevant advantages for the oil quality.
Oil-machine manufacturers, aiming at avoiding the thermal effect linked to the stone grinding, have fine-tuned destoning machines. It is not easy to make a comparison between previously-used systems and paste grinding through destoning. In fact, destoning through nut grinding allows for a paste with less solid particles, whose liquid phase represents 75-78% versus 70% of traditional paste; the paste is therefore smoother, even if the pomace has tougher links between the solid and liquid phase. The extrusion process, through the destoning grid, whose level of intensity depends on the machine regulation, allows for a higher percentage of minor components.
Some researchers believe that "destined oils" have higher organoleptic characteristics, while others state that the characteristics are not as such as to justify the operation.
The following phase is mixing or malaxation that allows small oil droplets to combine into bigger ones which can be removed in the next step through extraction.
It is a step of paramount importance in terms of oil yields and it has to follow strict standards in relation to the process length and temperature of the paste so as to reach the best quality in terms of oil production. However, studies and experimental tests show that better treatment of oil paste may be achieved with other technologies like mixing destoned pastes or pastes that are grinded in different ways in a controlled atmosphere or with inert gas, to evaluate the possibility of a higher extraction of minor components, even with longer mixing, but without increase of oil oxidation and also without endangering the formation of "derived" flavors by LPO (lipoxygenase, an endogenous enzyme of olives).
Presently by inerting the tanks, the oxydizable surface decreases as a consequence of two systems:

- mixing in nitrogen controlled atmosphere;
- tanks can be ordered with covers which discourage airchange and with transparent sides so that the mixing operator is able to check the degree of paste maturing, which is fundamental to start extraction.

As to extraction systems, although changes are still underway, two systems are used, basically: the discontinuous process, or traditional process, with superpresses and filtering discs, and the continuous one made with dual phase, triple phase centrifuges with vegetation water recycling.
Recently, some innovative solutions have been introduced: "environmental friendly" or "integral" systems, envisaging the use of centrifuges functioning with less or no added water and "water saving systems", using recycled vegetation water. Experimental data show that these processes create high quality oils with perfect phenol richness and intense aromatic character.
Testing these technologies also allowed for the increase of the product quality. It was shown that the greatest advantage of this technology is the fact of eliminating, from the extraction phase, the "washing out" phase of natural antioxidants which are highly water-soluble.
This also led to some innovation in storage systems: the product is now stored in stainless steel tanks, hermetically sealed, filled in or in nitrogen inert atmosphere, with easy discharge of slime and controlled temperature. It is worthwhile mentioning some packaging innovations: the introduction of PET packaging and one-time-use sealed packs for public restaurants.

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